

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property Organization
International Bureau**



**(43) International Publication Date
29 September 2005 (29.09.2005)**

PCT

(10) International Publication Number
WO 2005/090891 A1

(51) International Patent Classification⁷:
B60H 1/32, F25B 39/02

F28F 9/02,

Designated States (unless otherwise indicated, for every

1/32, F25B 39/02

(21) International Application Number:

PCT/JP2005/006000

(22) International Filing Date: 23 March 2005 (23.03.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2004-084608 23 March 2004 (23.03.2004) JPN
60/556,370 26 March 2004 (26.03.2004) USA
2005-072696 15 March 2005 (15.03.2005) JPN

(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GI, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CII, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

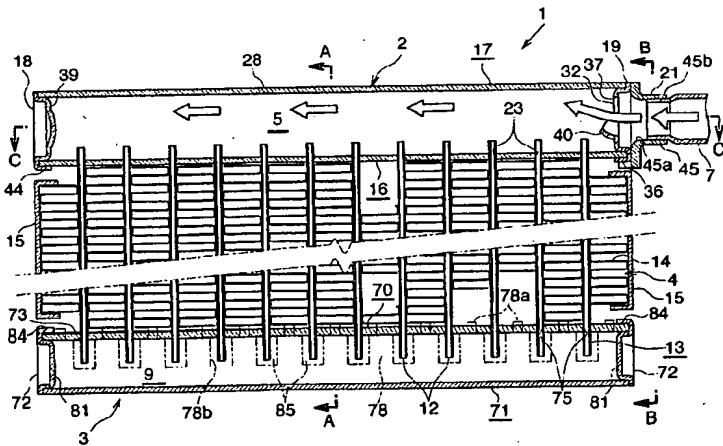
(71) **Applicant (for all designated States except US): SHOWA DENKO K.K. [JP/JP]; 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 1058518 (JP).**

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HEAT EXCHANGER



(57) **Abstract:** A heat exchanger 1 comprises a heat exchange core 4 composed of heat exchange tubes 12 in groups 13 in the form of two rows arranged in parallel in the direction of flow of air through the exchanger, a refrigerant inlet header 5 disposed on the upper-end side of the tubes 12 and having one row of heat exchange tubes 12 joined thereto and a refrigerant outlet header 6 disposed in the rear of the inlet header 5 on the upper-end side of the tubes 12 and having the other row of heat exchange tubes 12 joined thereto. A cap 19 for closing an opening of the inlet header 5 at one end thereof is provided with a refrigerant inlet 37. The cap 19 has a lower edge defining the inlet 37 and provided with a guide 40 upwardly slanting inwardly of the inlet header 5.

WO 2005/090891 A1